EE524 Machine Learning Lab

Assignment 6

27 September 2022

1. Suppose you're on a game show, and you're given the choice of three doors. Behind one door is a car, behind the others, goats. You pick a door, say 1, and the host, who knows what's behind the doors, opens another door, say 3, which has a goat. He says to you, 'Do you want to pick door 2? Is it to your advantage to switch your choice of doors?
   Hint:

   - Your Door, which represents the initial choice that you make as the contestant in this game. We assume a uniform prior distribution, i.e., each door has the same probability of being picked by you.
   - Location of Car, as the name implies, refers to the door behind which the car is hidden. We also assume a uniform prior distribution, i.e., you do not have any knowledge as to where the prize might be located.
   - Door Opened is the door that the game host opens. He chooses the door according to the following two rules:
     - He won't open the door that you just selected
     - He also knows where the car is, so he won't open the door behind which the car is located